Chapter 1

INTRODUCTION

The Caloosahatchee Watershed is considered a subset of two of the four regional planning areas within the South Florida Water Management District (SFWMD), the Lower West Coast and the Lower East Coast areas. The Caloosahatchee planning area covers approximately 1,400 square miles and includes significant areas in Glades and Hendry counties, a part of Lee county and a small part of Collier, Charlotte and Palm Beach counties (Figure 1.1). Urban land use is primarily located in the western portion of the watershed in Lee County. Agriculture is primarily located to the east in Hendry and Glades counties. Agriculture has been the predominant land use and is expected to remain so in the future. Citrus and sugarcane have become the dominant crops in the planning area and occupy more than 86 per cent of the irrigated agricultural acreage in the region. Interspersed with these land uses are more than 437,000 acres of pasture, upland forests and wetlands.

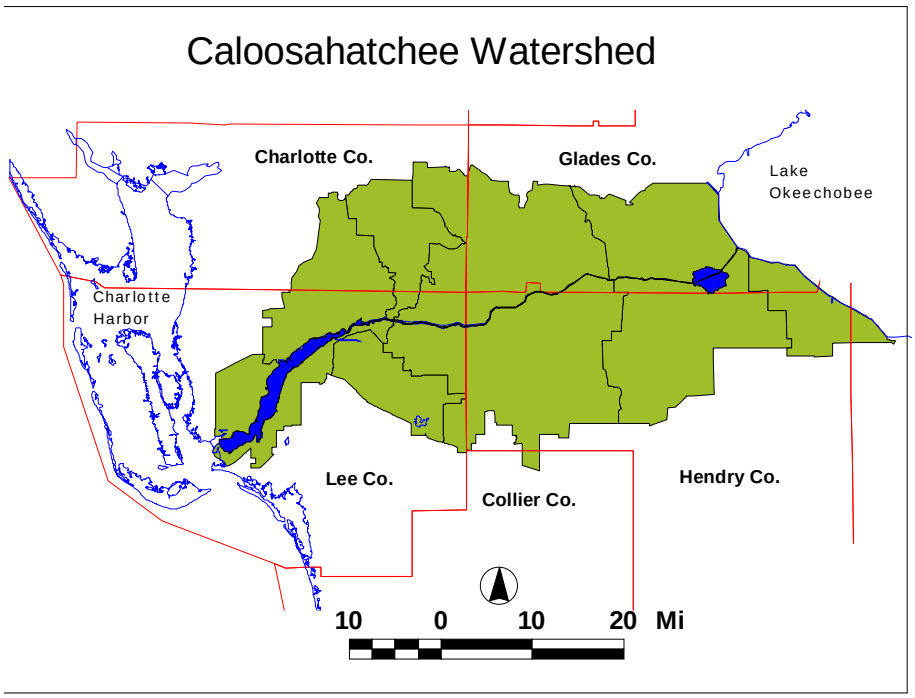

Figure 1.1 Caloosahatchee Planning Area

The planning area offers many challenges in maintaining adequate water supply for growing urban and agricultural demands while meeting the needs of the environment. The Caloosahatchee watershed is expected to experience substantial growth between now and 2020. The region's human population is expected to increase by 45 percent to 370,000 people. Agricultural acreage is expected to increase by 7 percent overall; however, it is anticipated there will be conversion from pasture and row crops to citrus and sugarcane. The total average water demand is projected to increase by 45 percent to 232,000,000,000 gallons per year by 2020.

The modeling analysis for this plan uses several approaches. The 2010 projections from local

governments and the agricultural industry were reviewed with more recent information to comply with statutory changes in 1997. In addition, a new modeling approach, which utilizes an integrated groundwater/surface water model capable of simulating interaction of ground and surface water within the watershed, was used in this study. The model, MIKE SHE developed and supported by the Danish Hydraulic Institute, is an ideal tool for investigative studies in areas such as the Caloosahatchee basin where significant surface water/groundwater interactions occur.

PURPOSE

The purpose of the Caloosahatchee Water Management Plan (CWMP) is to provide a framework for future water use decisions to provide adequate surface water supply for urban areas, agriculture, and the environment through 2020 within the Caloosahatchee basin. The plan estimates the future surface water supply needs of urban areas and agriculture, weighs those demands against historically used surface water sources, and identifies areas where these demands cannot be met without harming the resource and environment. This plan includes recommendations on how this surface water deficit can be ameliorated.

This initial plan evaluates the potential of several alternative surface water supply and surface water management options to meet projected deficits and makes recommendations for their development and implementation. The initial planning efforts addressed in this document will be referred to as the inner ring and will be completed for inclusion in the Lower East Coast (LEC) and Lower West Coast (LWC) Water Supply Plans. The items that will not be completed in time for inclusion into the plan will be referred to as outer ring activities and will be incorporated into the Southwest Florida Study (SWFS, previously know as the Southwest Florida Feasibility Study) or future revisions to the CWMP. The Goal section, later in this Introduction, will delineate the inner ring and outer ring goals.

An important part of the planning process has been identifying constraints to water supply and exploring opportunities to maximize use of the resource. This involved extensive input from the Caloosahatchee Advisory Committee (CAC), whose members represent a variety of disciplines and interests, such as local governments, public water supply utilities, environmental interests, and agriculture, as well as the general public. In addition, a Model Advisory Team (MAT) was established consisting of representatives of the major stakeholders. The MAT reviewed each step of the modeling process for reasonableness and appropriateness. They discussed the assumptions and limitations of the model and model approach.

Water management in South Florida is multifunctional, reflecting the District's four main areas of responsibility: water supply, flood protection, water quality, and natural systems management. Due to the interrelationships of these areas of responsibility, this plan was coordinated with the LECWSP and LWCWSP, the Central and Southern Florida Project Comprehensive Review Study (Restudy), and the Comprehensive Everglades Restoration Program (CERP, implementation phase of the Restudy), as well as other planning and research efforts in the region. The solutions of these studies will enhance regional water supply by increasing surface water availability and improving water quality. Other related studies include efforts to identify indicator species that will be evaluated to determine the health of the estuary and determine options that will increase the viability of those species in the estuary. This comprehensive, coordinated approach, combined with extensive public input throughout the

planning process, ensures that solutions are balanced and consider all aspects of water management.

BASIS OF WATER SUPPLY PLANNING

The Florida Legislature has delegated authority to the District to protect South Florida's water supply by managing use to meet the future demand. The District has undertaken a water supply planning initiative to ensure prudent management of South Florida's water resources. This initiative began with the development of a Water Supply Policy Document (1991), and continued with the Water Management Plan (1995), District Water Supply Assessment (1998), and regional water supply plans (on going). The District's water supply planning functions are guided by the directives and policies embodied in the District's Water Supply Policy Document (SFWMD, 1991), State Water Policy (Chapter 62-40, F.A.C.), Chapter 373, F.S., the State Comprehensive Plan (Chapter 187, F.S.), and delegation of authority from Florida Department of Environmental Protection (FDEP). In addition, the plan meets the requirements of the 1996 Governor's Executive Order (96-297) and the 1997 legislative water supply amendments to Chapter 373, F.S. Legal authority and requirements, including new legislation, is further described in Chapter 1 of the Support Document.

PLAN GOALS

The Caloosahatchee Advisory Committee adopted the following goals for the Caloosahatchee basin. There is no priority ranking associated with the goals; each goal is of equivalent weight and value.

Goal 1. Meet the Requirements of House Bill 715

Sub-goals (Inner Ring)

1.1. Include a surface water supply component in the plan.

1.2. Include a surface water resource development component in the plan.

1.3. Ensure that water is provided to all users on an equitable basis.

1.4. Provide 1 in 10 level of service for water supply (target level of service).

1.5. Establish minimum flows and levels. (MFLs) (Established in the LWCWSP.)

1.6. Include a recovery and prevention strategy for MFLs. (To be completed once MFLs are established.)

1.7. Include a funding strategy for water resource development projects.

1.8. Identify 20-year planning horizon and plan updates every 5 years.

Goal 2. Ensure Incorporation of other Planning and Management Efforts

Sub-goals (Inner Ring)

2.1. Compile local government assumptions and projections for the Caloosahatchee watershed and identify local ordinances that would directly implement or directly conflict with water supply

development efforts.

2.2. Assess the recommendations of Sustainable South Florida Commission and the Charlotte Harbor National Estuary Program for inclusion into the CWMP.

2.3. Ensure the recommendations of the CWMP are incorporated into the LWCWSP, LECWSP, CERP, and Southwest Florida Study, as well as local, regional, and state planning programs within the Caloosahatchee Basin.

2.4. Obtain Governing Board Approval of the Caloosahatchee Water Management Plan.

Goal 3. Accommodate the Human Population

Sub-goals (Inner and Outer Rings)

3.1. Identify the current and long-term water demands of public and private water utilities. (Inner Ring)

3.2. Develop surface water resource source options through the application of water models. (Inner Ring)

3.3. Ensure protection of public water supplies through the Water Supply Plan (Inner Ring) and Permitting. (Outer Ring)

3.4. Identify multiple use strategies for all water resources, and where practical, stormwater and waste water systems. (Outer Ring)

3.5. Identify areas with critical freshwater flood management needs and develop strategies to modify existing laws and regulation. (Outer Ring)

3.6. Coordinate with the Florida Department of Environmental Protection to identify water sources that have been identified as contributing to health problems. (Outer Ring)

Goal 4. Sustain Agriculture

Subgoals (Inner and Outer Rings)

4.1. Quantify current surface water demands. (Inner Ring)

4.2. Quantify future surface water demands and sources. (Inner Ring)

4.3. Collect data and develop initial groundwater/surface water model to answer surface water supply and storage questions. (Inner Ring)

4.4. Develop and review current permitting criteria to address on-site agricultural water storage. (Outer Ring)

4.5. Develop permitting criteria to address surface and groundwater requirements. (Outer Ring)

4.6. Review on-site retention to supplement surface water withdrawals from the river. (Inner Ring)

4.7. Coordinate urban and agriculture surface water resource management. (Outer Ring)

4.8. Search for and identify new surface water sources. (Outer Ring)

Goal 5. Sustain the Natural System

Subgoals (Inner and Outer Rings)

5.1. Identify current and historic low, high, average, and median flows into the estuary and establish minimum flows and levels. (MFLs are being established in the LWCWSP.) (Inner Ring)

5.2. Identify interim C-43 operational modifications to minimize estuary degradation. (Outer Ring)

5.3. Identify long-term C-43 operational modifications to minimize estuary degradation. (Inner Ring)

5.4. Establish and implement water regimes to optimize estuarine health. (Outer Ring)

5.5. Identify freshwater habitats (including wetlands and oxbows) and develop scientifically based management strategies to protect their natural function. (Outer Ring)

5.6. Develop economic analysis of estuary resources. (Outer Ring)

5.7. Coordinate with the Florida Department of Environmental Protection and other agencies to identify existing nutrient and harmful material inflows to the Caloosahatchee Estuary and ensure studies necessary to reduce harmful inflows are undertaken. (Outer Ring)

5.8. Identify important estuary indicator species (Inner Ring), identify harmful items affecting the estuary, and develop a monitoring plan to ensure the health of the indicator species. (Outer Ring)

5.9. Identify impacts associated with Sanibel Causeway. (Inner Ring) (The District is having a 3-dimensionsal model developed to assist Lee County in identifying water quality and environmental impacts associated with the Causeway.)

Goal 6. Develop and Implement Storage Alternative Test Sites

Subgoals (Inner and Outer Rings)

6.1. Develop on-site field scale surface water storage evaluation sites. (Inner Ring)

6.2. Evaluate field scale Aquifer Storage and Recovery (ASR) potential. (Outer Ring)

6.3. Develop surficial aquifer storage evaluation sites. (Inner Ring)

Goal 7. Identify Water Resources Options

Subgoals (Inner and Outer Rings)

7.1. Establish a system of incentives for each category of user that encourages efficiencies among existing users and creates supplies. (Outer Ring)

7.2. Develop a technically sound assessment of additional water sources. (Outer Ring)

7.3. Provide a list of geographically specific water resource development options. (Outer Ring)

Goal 8. Establish Minimum Flows for the Caloosahatchee Estuary (Inner Ring)

8.1. Will be completed as a part of the LWCWSP. Adoption of MFLs is scheduled for December 2000.

Goal 9. Protect Private Land (Outer Ring)

Goal 10. Protect Recreational and Commercial Use (Outer Ring)

Goal 11. Protect Land Adjacent to the River (Outer Ring)